

WHAT IS CLAIMED IS:

1. An outboard motor having an electrical generator and integral cooling arrangement therefor, said motor including:

an internal combustion engine having an engine block, a crankshaft, and a bearing that journals a portion of the crankshaft for rotation within said engine block, an electrical generator comprising :

(i) a stator armature comprising a series of stacked plates formed of a material having high magnetic permeability,

(ii) a heat conductive plate having substantially the same planar dimensions as said stacked plates, said heat conductive plates formed of a material having a higher heat conductivity than said stacked plates having high magnetic permeability, said heat conductive plate abutted against one of said plates having high magnetic permeability; ¹¹²

(iii) an armature coil wound around the assembly of said stacked plates of magnetic permeability and said heat conductor plate so that heat conductive plate is an integral part of said stator armature; and

(iv) a rotor coupled to said crankshaft having magnets rotatably mounted in juxtaposition with said stator armature; and

a stator bracket formed of a material having high heat conductivity, said bracket directly attached to said engine block and said conductive plate integral with said stator armature so that the resistance heating within said stator armature is transferred through said conductive plate and said stator bracket to the engine block.

2. An electrical generator for a watercraft, said generator having an integral cooling arrangement comprising

a stator armature comprising:

(i) a series of stacked plates formed of a material having high magnetic permeability;

(ii) a heat conductive plate having substantially the same planar dimensions as said stacked plates, said heat conductive plate formed of a material having a higher heat conductivity than said stacked plates, said heat conductive plate abutted against one of said plates having high magnetic permeability; and

(iii) an armature coil wound around the assembly of said stacked plates of magnetic permeability and said heat conductive plate so that heat conductive plate is an integral part of said stator armature; and

(iv) a rotor having a plurality of permanent magnets rotatably mounted in juxtaposition with said stator armature.

3. An electrical generator having an integral cooling arrangement comprising:
a stator armature comprising a series of stacked plates formed of a material having magnetic permeability;

a heat conductive plate having substantially the same planar dimensions as said stacked plates, said heat conductive plate formed of a material having a higher heat conductivity than said stacked plates;

said heat conductor plate abutted against one of said plates having magnetic permeability; and

an armature coil wound around the assembly of said stacked plates of magnetic permeability so that said heat conductive plate is an integral part of said stator armature.

4. The electrical generator of Claim 3 wherein said heat conductive plate is formed of aluminum.

5. The electrical generator of Claim 3 wherein said heat conductive plate is formed of a material with a thermal conductivity equal to that of aluminum.

6. The electrical generator of Claim 3 wherein said heat conductive plate is formed of a material with a thermal conductivity equal or greater than that of aluminum.

7. The electrical generator of Claim 3, wherein said stator bracket is formed of aluminum.

8. The electrical generator of Claim 3, wherein said stacked plates having magnetic permeability are formed of iron.

9. An electric generator configuration designed to better dissipate the heat generated by electrical induction mounted on a watercraft marine engine having at least one cylinder and crankshaft, said system comprising:

electrical generator mounted on said engine located at one end of the crankshaft;

a series of uniformly spaced radially extended armature legs made of metal having magnetic permeability attached to a similar shaped aluminum plate; and

a flywheel rotor attached to said crankshaft containing various magnets to induce an electrical current in said armature legs;

10. The electric generator configuration of Claim 9, wherein the armature legs and aluminum plate are mounted to an aluminum stator bracket.

11. The electric generator configuration of Claim 9, wherein the heat induced is designed to be directly dissipated through said aluminum plate to the stator bracket.

12. The electric generator configuration of Claim 10, wherein said stator bracket is mounted to the cylinder block of said marine engine.

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